

Amendments to the Specification:

Please replace the paragraph on page 1 that immediately follows the heading "REFERENCE TO RELATED APPLICATIONS", with the following amended paragraph:

This application is related to a companion application, Serial No. 09/574,840 [[_____,]] (IOS-118), filed on even date herewith and assigned to the assignee of the present application.

Please replace the paragraph on page 1 that immediately follows the heading "FIELD OF THE INVENTION", with the following amended paragraph:

This invention relates to a process for producing photosensitive thin films of sol-gel derived glass and to such films of a thickness useful for integrated optic devices produced thereby. [[.]]

Please replace the paragraph beginning on page 3, line 9, which starts with "Fig. 1 is a side view" with the following amended paragraph:

Fig. 1 is a side view of film 11 of a sol-gel film with R-M-X constituents dissolved therein. The film is shown formed (usually by a well known spinning technique) on the SiO₂ surface layer 12 on a silicon substrate 13. The R constituents are taken from a class of volatile organic materials consisting of CH₃, CH₃ - CH₂, CH₃ - CH₂ - CH₂, the M constituents (metals) are taken from the class of metals consisting of group [[IVA]] IVB metals Ge, Sn and Pb, Group [[VI]] VIB including Se and Te, Group [[VIII]] VIIIA including Fe, ~~Cu~~ Co, Ni, and Group [[IVB]] IVA including Ti and [[Zn]]

Zr and rare earth metals, and the X constituents (photosensitizers photolabile moiety) are taken from the class consisting of chlorine, iodine, fluorine, bromine, and ~~carbon~~ carbon carbonyls.

Please replace the paragraph spanning pages 3 and 4 of the specification with the following amended paragraph:

Specifically, fig. 3 is a block diagram of the process for fabricating structured films from the sol-gel solution of fig's. 1 and 2. Block 31 of fig. 3 represents the step of forming a sol-gel film with inclusions of R-M-X on a suitable substrate (as shown in fig. 1 or fig. 2). Block 32 represents the exposure of the film through a mask to light in a range of wavelengths from ultraviolet (UV) through the visible range. This step unbinds the ~~photosensitizer~~ photolabile moiety (X) and binds the metal (M) to the silicon oxide.

Please replace the paragraph beginning on page 4, line 5, which starts with "Block 33 of fig. 3 represents", with the following amended paragraph:

Block 33 of fig. 3 represents the step of heating the film to about 300 degrees C for a time to bind the metal permanently to the SiO₂. This step also drives off the unexposed organometallic photosensitizer from the entire sol-gel layer and the unbound photolabile moiety (X) from the exposed portions of the sol-gel layer. Block 34 of fig. 3 represents the final heating step to about 900 degrees C for ~~driving off the metal and the photosensitizer from unexposed regions of the film~~ unbinding the organic component (R) from the bound photosensitizer and driving off that

component. This step also permanently binds the metal to the silica sol-gel film forming a metal oxide glass modifier.

Please replace the paragraph beginning on page 4, line 9, which starts with "Fig. 4 shows", with the following amended paragraph:

Fig. 4 shows the structure of fig. 1 with a mask 40 in place. Mask 40 is opaque to the incident light (arrow 41) in regions 42 and 43 and is transparent to light in region 44. The result of exposure to light is a structured film (in excess of 1 micron) where the exposed region of the film includes $[[\text{Si} - \text{O} - \text{M} - \text{Si}]]$ $\text{Si} - \text{O} - \text{M} - \text{O} - \text{Si}$ and the unexposed regions include SiO_2 .

Please replace the paragraph beginning on page 4, line 19, which starts with "In one specific embodiment", with the following amended paragraph:

In one specific embodiment, a sol-gel film 1 - 10 microns thick was formed on a silicon substrate 1 cm x 0.5 cm x 0.1 cm thick with a SiO_2 surface layer < 2 microns thick thereon. The sol-gel film included Sn (M) 2%, I (X) 2%, and $(\text{CH}_3)_3$ (R) 2%. Region 44 has a width of 10 microns, exposed to light with a wavelength of 254 nm for 30 minutes. The exposed region had an index of refraction of 1.55 and the unexposed regions had indices of refraction of 1.45. The film has a thickness of 1 - 10 microns after processing and has unchanged lateral dimensions.

Please replace the paragraph beginning on page 5, line 3, which starts with “In another embodiment”, with the following amended paragraph:

In another embodiment, a sol-gel film 1 - 10 microns thick was formed on a glass substrate 1 cm x 0.5 cm x 0.1 cm thick. The sol-gel film included Ti (M) 2%, Cl (X) 4%, and Cp (~~R~~ R) 4% where Cp is cyclopentadienyl. Region 44 has a width of 10 microns, exposed to light with a wavelength of ~~5.14~~ 514 nm for 120 minutes. The exposed region had an index of refraction of 1.75 and the unexposed region had indices of refraction of 1.45. The film had an final thickness of 1 - 10 microns with the lateral dimensions thereof being unchanged.